Grip strength is associated with marksmanship and defensive tactics, but not injuries, in police recruits

Orr, Rob Marc; Stierli, Michael; Hinton, Benjamin; Steele, Michael

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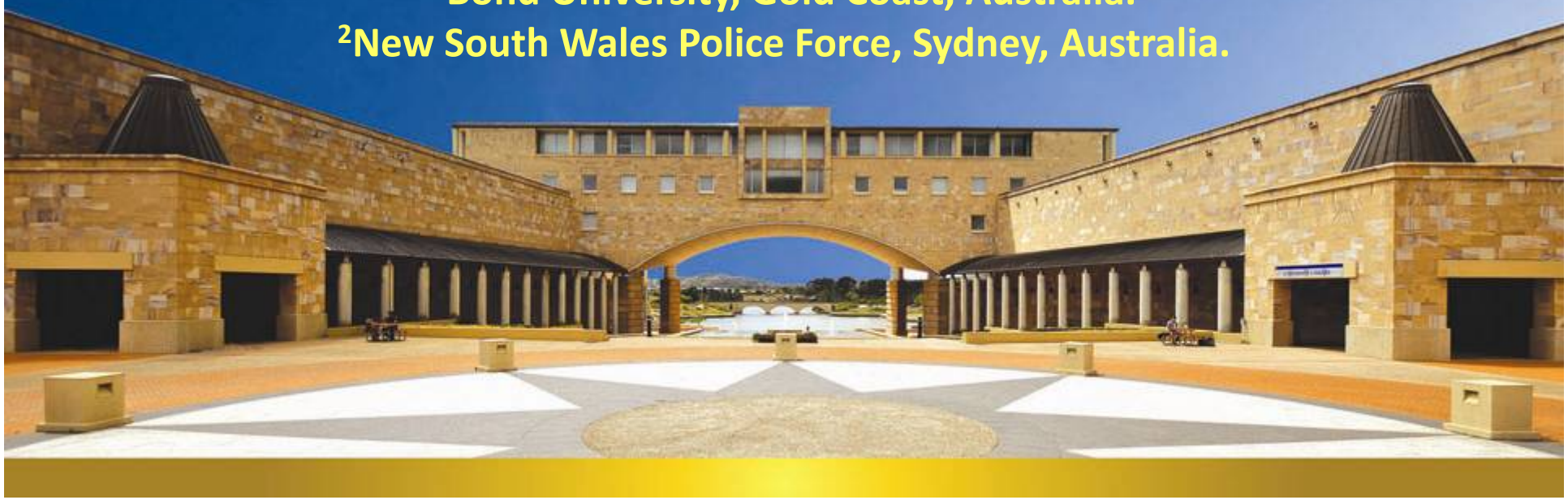
Grip strength is associated with marksmanship and defensive tactics, but not injuries, in police recruits

Orr RM[1], Stierli, M[2], Hinton, B[2]. Steele, M[1]
[1]Bond University, Gold Coast, Australia.
[2]New South Wales Police Force, Sydney, Australia.



INTRODUCTION

- **Question**: How important is grip strength in police?

	AFP	NSW Pol	VIC Pol	Q POL	NT POL	TAS Pol	NZ Pol	UK Pol	Metro Pol LA / Reno	ADF	Fire
Male											
	40 nd: 45 d	30*	30*	N/A	N/A	45*	96 (L+R)	32*~	36*	N/A	N/A
Female											
	30 nd: 35kg d	30*	30*	N/A	N/A	25*#	52 (L+R)	32*~	36*	N/A	N/A

nd = non-dominant hand: d = dominant hand
* each hand
~ removed from assessment protocol-No longer used.
# 39 years and younger. 40 and over = 24 kg

INTRODUCTION

- **Question**: How important is grip strength in police?
  - For marksmanship?

INTRODUCTION

- **Question**: How important is grip strength in police?
  - For defensive tactics?

INTRODUCTION

- **Question**: How important is grip strength in police?
  - As a predictor of injury?

METHODOLOGY

- **Outcome Measures - Grip Strength**:

  * Grip Strength taken in conjunction with other fitness measures by NSW Police PTI within Week 1

  * Protocols described by Dortkamph (1987) with grip dynomometer

METHODOLOGY

- **Outcome Measures - Injury**:

  *Injury results as recorded on the police injury database using a standard issue form were collected 4 weeks after course completion.

  *Only injured / not injured status was recorded

  * Serious enough for the recruit to have sought treatment

METHODOLOGY

- **Outcome Measures - DefTac**:

  *Defensive tactics performance as determined by training instructors (Pass/Fail)

METHODOLOGY

- **Outcome Measures - Marksmanship**:

*Marksmanship performance (static) with 9 mm Glock pistol fired from dominant hand on a Z4 target.

*Scores as allocated on the target

RESULTS

- **Descriptive data**

Group	N	Mean	
Session 1	50	43.64	± 9.8 kg*
Session 2	169	42.15	± 8.3 kg* **

*Injury data
*Deftac and Marksmanship data

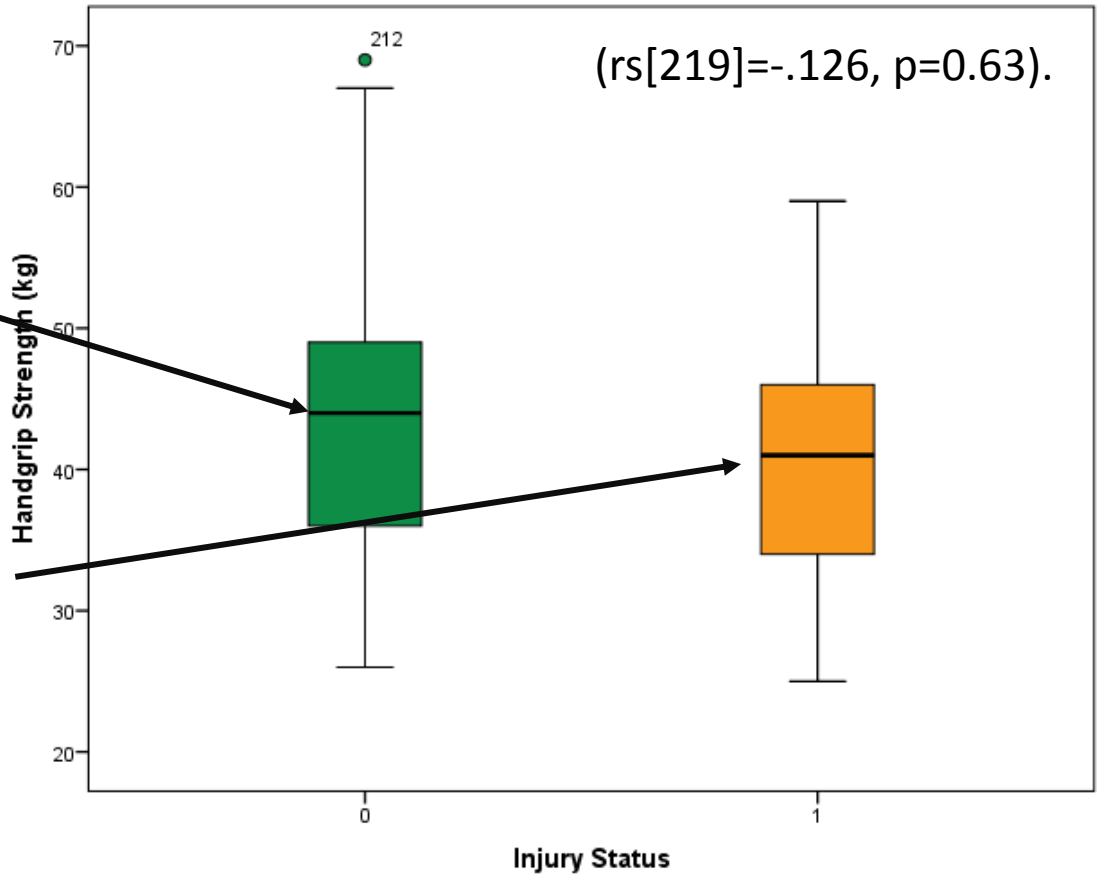
No significant difference between groups (p=0.287).

RESULTS

- **Grip Strength and Injury**
  - •26% (n=56) sustained an injury

43.18 ± 8.73 kg
(26-69)

40.48 ± 8.15kg
(25-59)

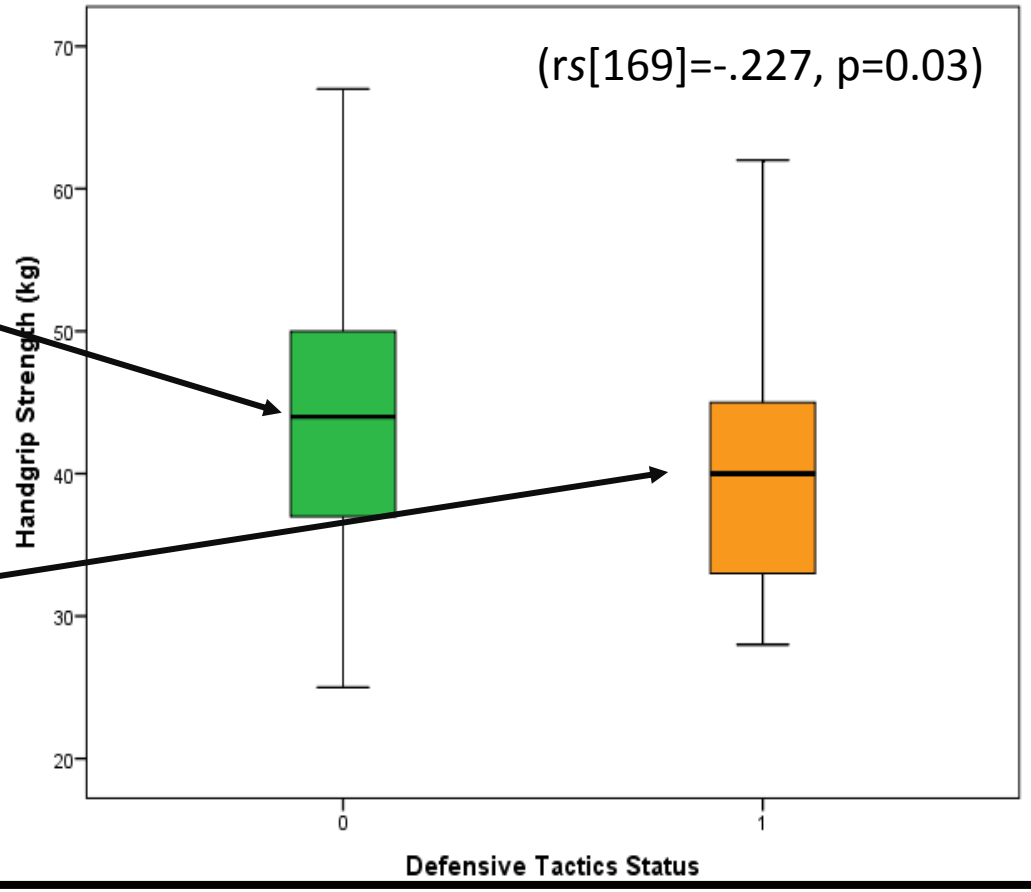


RESULTS

- **Grip Strength and Deftac**
  - •41% (n=70) failed

43.68 ± 8.36 kg
(25-67)

40.00± 7.73kg
(28-62)

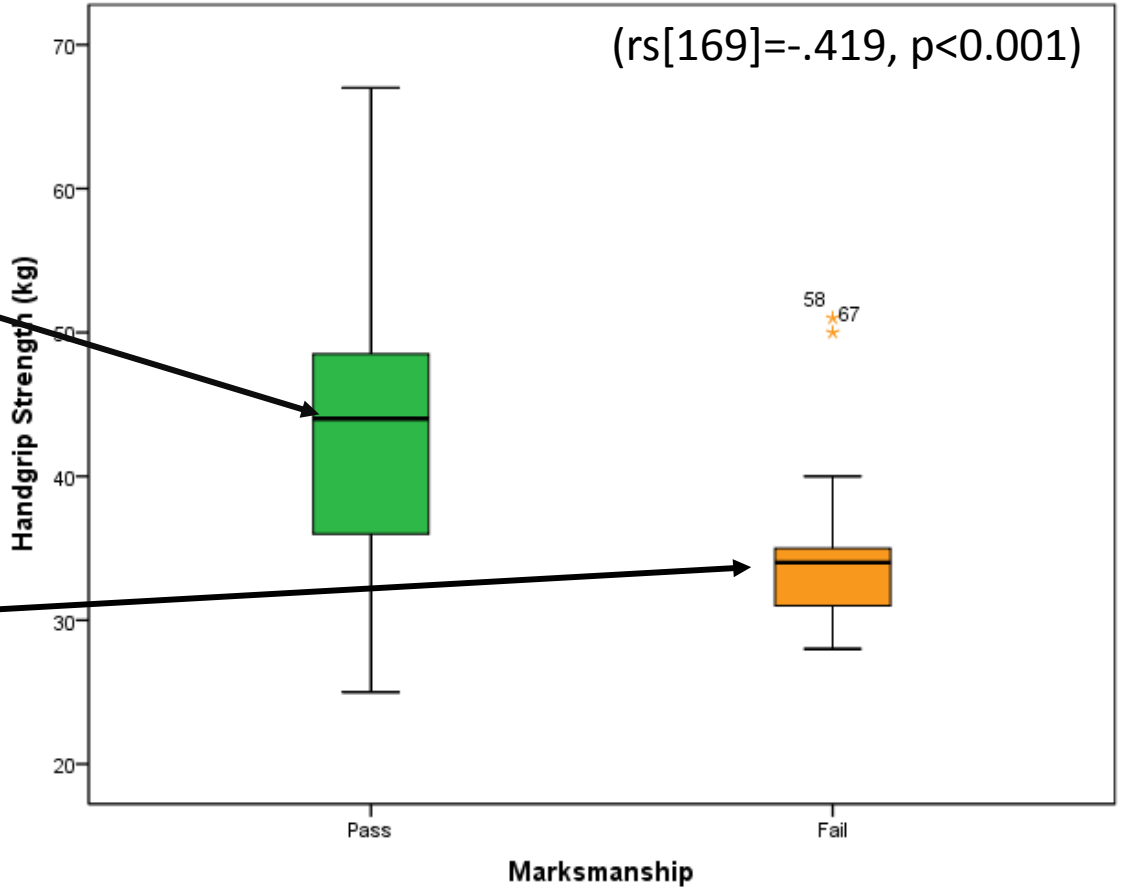


RESULTS

- **Grip Strength and Marksmanship**
  - 12% (n=21) failed

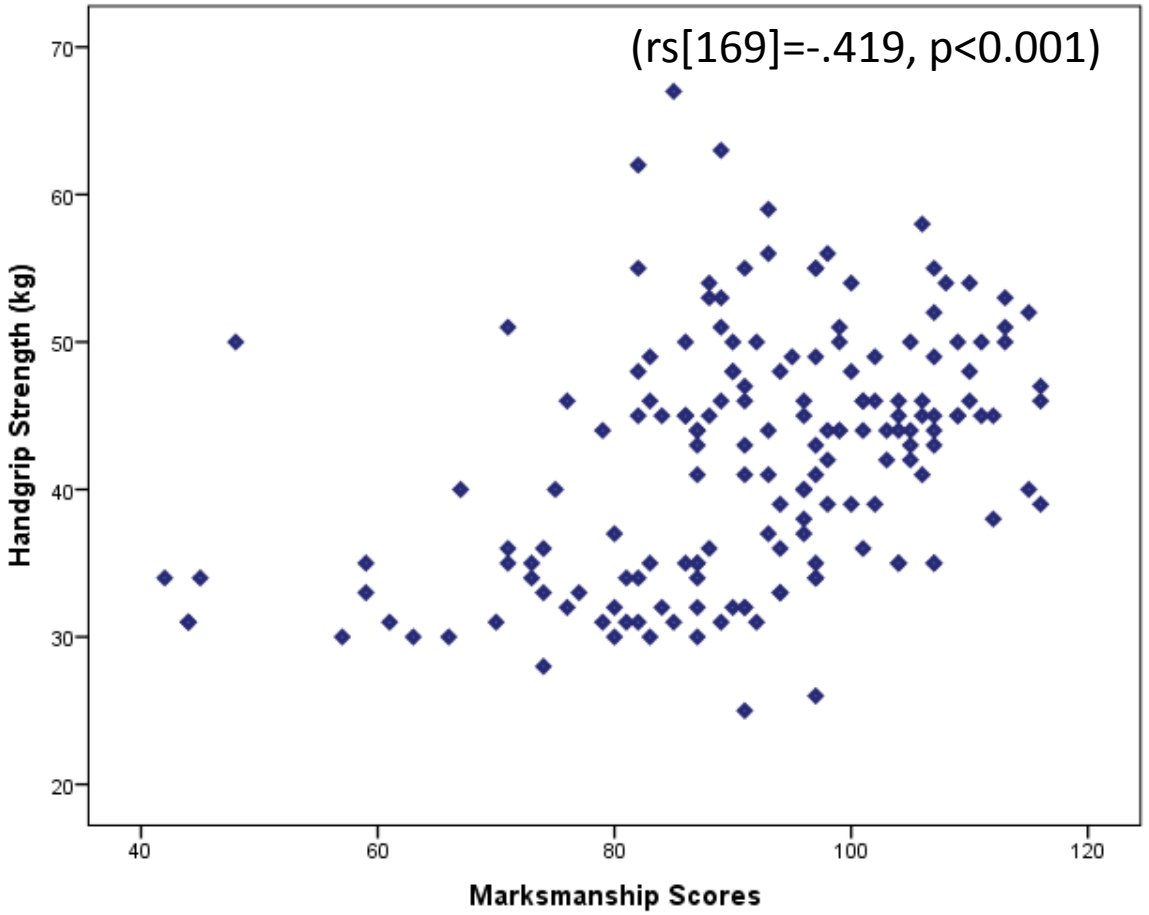
43.22 ± 8.04 kg
(25-67)

34.67± 5.94kg
(28-51)



RESULTS

- **Grip Strength and Marksmanship**



DISCUSSION

Injury Findings

-Supports previously unpublished research findings in this population

- This research as a predictor of acute injury and does not take into account long term health and mortality (Bohannon, 2008; Rantanen et al., 1999; Sasaki, Kasagi, Yamada, & Fujita, 2007; Sayer et al., 2006)

DISCUSSION

Deftac findings

-Supports subjective reports by officers

-Influenced by technique?

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DISCUSSION

Marksmanship findings

-Supports findings of majority of research

- (Anderson & Plecas, 2000; Copay & Charles, 2001; Vercrnyssen, Christina, Muller, & Grose, 1988)

-Influenced by technique

- (Copay & Charles, 2001)

-Use in safety and capability?

CONCLUSIONS

•Grip strength may not predict injury risk in police officers undergoing recruit training

•Grip strength may play a role in the marksmanship and defensive tactics performance of police recruits, however its relationship with these tasks is not strong enough to provide a predictive value.

CLINICAL RELEVANCE

- Grip strength may influence a police recruit's marksmanship and defensive tactics performance.

- Optimising grip strength following injuries that affect a police recruit's grip strength is important.

- Grip strength may be a useful outcome measure in return-to-training planning for police officer recruits undergoing treatment for upper limb injuries.

LIMITATIONS & FUTURE RESEARCH

- Injury data depth

  → Need to investigate with greater depth, ie type, area, mechanism

- Gender (limited data)

  → Potential benefit of reviewing by gender as opposed to gender neutral performance only

- Glock 17

  → Variations? (M4, Beretta 92, etc)

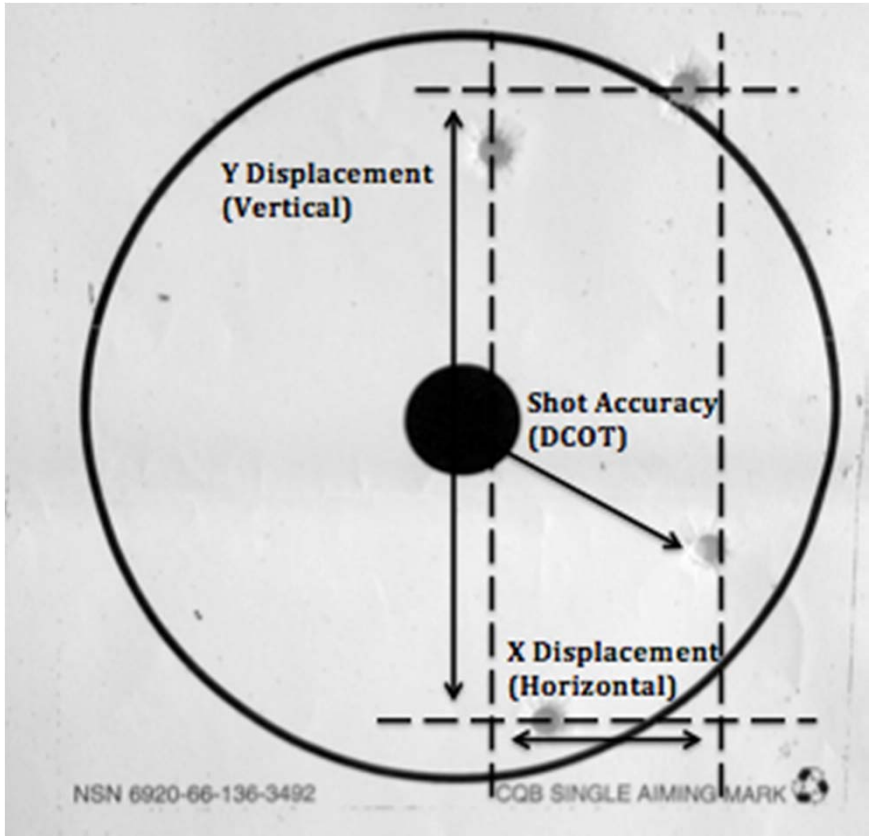
LIMITATIONS & FUTURE RESEARCH

- Grip strength measures

LIMITATIONS & FUTURE RESEARCH

- Marksmanship measures points based

→ marksmanship based on DCOT, Xd, Yd.



ACKNOWLEDGEMENTS

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